

ABSTRACT

5 A combustion system for a gas turbine engine
includes a Catalyst (CAT) combustion sub-system
for generating combustion products under a lean
premixed fuel/air condition in the presence of a
Catalyst and a Dry-Low-Emissions (DLE) combustion
sub-system, for generating combustion products
under a lean premixed fuel/air condition. Gaseous
and liquid fuels are used for the DLE combustion
sub-system while only gaseous fuel is used for
the CAT combustion system. The engine operates at
start-up and under low load conditions with the
DLE combustion system and switches over the
combustion process to the CAT combustion
sub-system under high load conditions. Thus the
combustion system according to the invention
combines the advantages of DLE and CAT combustion
processes so that the gas turbine engine operates
over an entire operating range thereof at high
engine efficiency while minimizing emissions of
nitrogen oxides and carbon monoxide from the
engine.